GRUMMAN
Overview

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Plans made to pass along a big secret

"Blood—we can't make it in the lab because we don't know the secret. But we can pass the secret on—from one human being to another."

With this slogan, Grumman Corporation and all of its subsidiaries start the first Long Island blood drive since World War II.

In announcing the completely voluntary plan, Jack Bierwirth, Grumman's chairman, and Joe Gavin, corporate president, asserted: "All the advantages of the program boil down to one net effect—improved quality of health services for you and your family.

"A major reason for initiating the blood program is a real sense of responsibility to not only the people of Long Island but most importantly our families, our friends and our neighbors. Grumman will be the largest single contributor to Long Island's blood donation program which is called 'Inter-County Blood Services' and serves the blood needs of the 2.5 million residents on Long Island. And since there are so many of us, the law of averages says we will probably be its greatest beneficiaries."

A priceless gift

Why is this precious commodity needed? Open heart surgery requires about 15 pints for each operation; often mothers encountering difficult childbirth are saved by transfusions; hemophilia victims are able to lead normal lives because of this priceless gift and it also offers prolonged life to leukemia victims. It's impossible to list all the needs, but possible to satisfy them.

Donating blood doesn't cost a thing, and it doesn't hurt a bit. And donating is actually healthy.

According to figures compiled by Inter-County Blood Services, a blood transfusion occurs every 17 seconds in the United States. The need for blood does not take a holiday, but the supply often does. To combat these temporary shortages, Grumman contributions will be made on a monthly schedule throughout the year.

A unique feature of the plan is the "blood credit" benefit that accrues when Grummanites get involved. When an individual gives blood through the program he or she and all immediate family members are assured of a blood supply to

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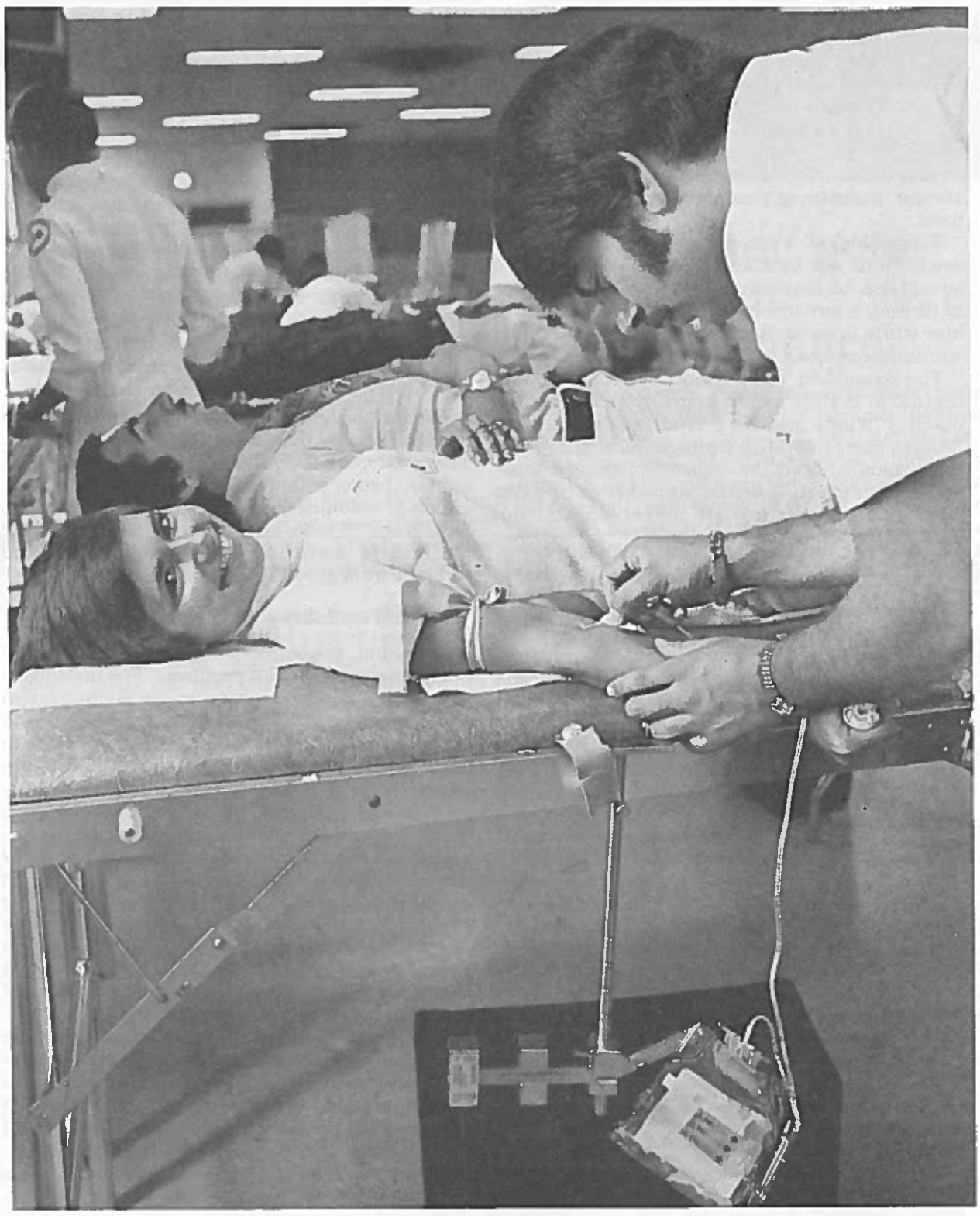


It doesn't hurt a bit

Giving blood never does. And Pat Ogilvie of Grumman Data Systems proves the point at a Grumman-sponsored blood donation session. Within the month, thousands more Grummanites will be finding this out as the corporation starts its first Long Island blood drive since World War II. (Photo by Dick Sander)

Engineer harnesses 'friendly' tornado

A tornado is one of the most destructive forces in nature. Violent winds drop from the sky in a funnel-shaped cloud to throw automobiles hundreds of yards, totally destroy buildings, and cause great havoc and sometimes death.

Such deadly efficiency comes from both the powerful winds and the extremely low pressure at their center. Buildings enveloped by a tornado may literally explode from the air pressure difference within a "twister."

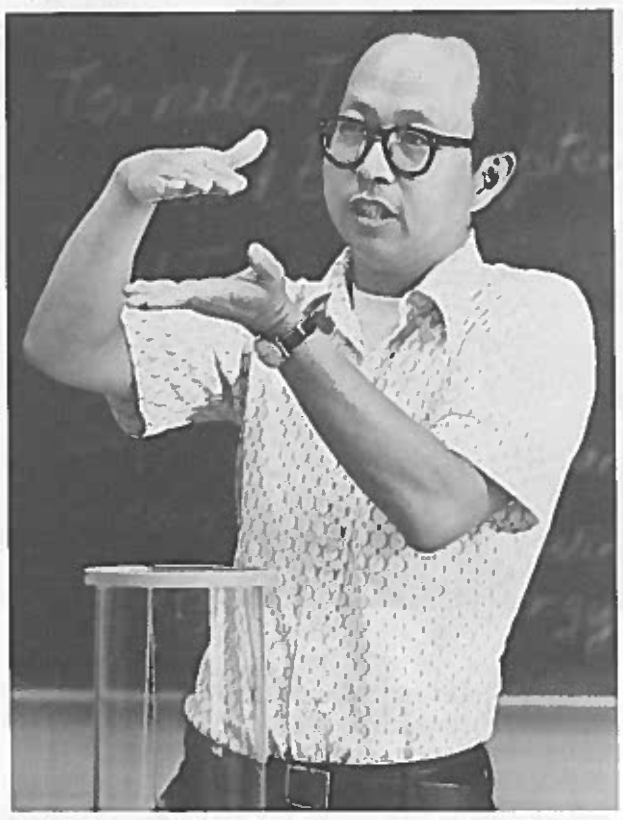
But researchers at Grumman Aerospace in Bethpage, N.Y., have found a way to create their own "friendly" tornado to generate electricity. The inventor of this concept is Dr. Jim Yen—a 10-year member of Grumman's research department.

Something of a small tornado himself, Yen easily spins out facts and figures that bolster the advantages of harnessing wind power. The idea of turning a tornado into a power source came to him while investigating other more conventional windmill concepts.

The tornado in Yen's energy system is created inside a cylindrical, open-top tower which catches winds blowing from any direction. Breezes enter the tower through ports in its sides then spiral around the structure's curved inner wall—forming an artificial tornado. As it gains velocity, the swirling air moves up and out through the top of the tower.

The action is at the core

"Just like a real tornado," Yen says, "the air pressure at the core of our tornado is very low and creates a partial vacuum. To fill the vacuum, we allow air to rush in from below the tower and flow up through the core of the tornado. This rush of air is used to drive a turbine beneath the tower floor. In turn, the turbine generates electricity.



Jim Yen demonstrates his tornado wind generator. (Photo by Fred Annette)

"Towers can be built several hundred feet high to capture stronger, faster winds at higher altitudes," Yen continues, "and the capacity of a complete unit should reach well over 100 megawatts. This is far greater than the 1 to 3 megawatt limit of most windmill concepts. And it's competitive with today's commercial methods of generating electricity."

Evaluating the potential

Among Grumman researchers, the "tornado-type wind turbine" is simply referred to as the "Yen machine." Much like a college professor, which he once was, Jim Yen will enthusiastically explain his invention using blackboard illustrations and working models. A short and slightly built man, Yen has great faith in his friendly tornado but realizes that all the figures are not in.

"The concept needs a great deal of testing," Yen says. "But so far it shows great potential as an efficient method for generating electricity."

Efficient or not, the Yen machine certainly will be more rugged than other large wind machines. That's because the rotating turbine is a smaller, lighter, better balanced and more compact machine—a machine less exposed to the elements. Says Yen: "These features promise to conquer the host of drawbacks that limit present wind turbines from growing beyond a few megawatts."

Flexibility should be a feature

True—but the entire concept presents a few intriguing construction problems. For instance, a large unit's wind collection tower might have to approach the size of the World Trade Center to reach the output levels that utilities would like to have. To build a structure that size would represent a difficult task and require a large investment. Also, what happens to such a tower when hit by storm force winds?

Dr. Yen has some answers. "Every tower doesn't have to be that big," he says. "They can be built large or small, depending upon the power requirements of the area they serve. They could even be built small enough to charge the battery of a car, for instance, or supply power to a single house. The average home only uses about 1 kilowatt of electricity per person.

"Whatever their size, the towers could be made of strong, low-cost materials in modular, prefabricated sections that are manufactured on assembly lines and easily lifted into place at the job site. Guying the entire structure to the ground would make it extra rugged.

"When extremely high winds push too hard on a tower," Yen continues, "ports on both the upwind and downwind sides can be opened. And during severe storms, the system could be opened all around to let the wind blow right through."

On the other hand, how can Yen's system continue to generate electricity when the wind couldn't even blow a mosquito off course? "By burning fuel at the base of the tower or introducing heat some other way," he says, "a 1-mile-per-hour wind is enough to generate power. Heat rising up through the tower draws a current of air in through the bottom much the same way the tornado does. Even a slight bit of wind blowing into the tower strengthens the updraft and helps it spin the turbine. This approach has been shown to work in small models but, again, its ultimate potential is yet to be determined.

"Fuel can be supplied by the system itself," he goes on. "Surplus electricity would be used to produce chemicals for storage nearby. When the wind is hardly blowing, the chemicals can be burned to generate electricity.

"Using these methods, the system can operate continuously and supply power on demand. These are two of its most valuable assets.

"The United States requires 10 million barrels of oil per day to produce the 400,000 megawatts of electricity we all use," Yen says. "That's why we're importing about twice as much oil from the Middle East as we were before the 1973 oil boycott. Sources like the Alaskan pipeline supply only about 1.2 million barrels a day. That isn't very much, and once it's out of the ground, oil is gone for good.

"But when we put the wind to work, we're getting something from almost nothing. And the wind has no limit. It's like having an inexhaustable oil field."

Grumman seats new director

Archie E. Albright

Grumman Corporation Chairman Jack Bierwirth announced the election of Archie E. Albright to the corporation's board of directors. Albright is vice chairman of the board of Drexel Burnham & Co., one of the most prestigious investment banking firms on Wall Street. He serves as senior investment banking management representative at executive committee level, and as chairman of the firm's finance and compensation committees.

The new director is a magna cum laude graduate of Wittenberg University. He also holds two degrees from Yale Law School. As chairman, president, and chief operating officer of Drexel Firestone, Inc., he helped negotiate that firm's merger with Burnham & Co. in 1973—a combination that produced one of the strongest investment banking/brokerage complexes in the financial industry.

Allied ambulance rushes aid to cardiac victims

Mike Stern, who works in New York City's garment district, was downed by a heart attack outside his office recently.

A co-worker called the police, and within minutes a specially-equipped coronary-care ambulance arrived from St. Vincent's Hospital nearby. As Stern was being lifted into the ambulance, two doctors and a nurse went to work on him using medical techniques and equipment usually seen only inside a hospital's emergency room.

The coronary care ambulance used by St. Vincent's Hospital is custom built by Grumman Allied Industries. Medical heart specialists in the area feel that its success and the success of St. Vincent's method of treating heart attack victims inside this "mobile emergency room" is resulting in a new and more effective defense against such coronary attacks—a trend that other hospitals are following.

Grumman Allied prides itself as a manufacturer of quality emergency vehicles such as ambulances, rescue trucks and, most recently, Howe fire trucks and fire fighting apparatus. The coronary-care ambulance is another major step by Allied in meeting the emergency equipment requirements of hospitals throughout the country.

The hospital goes to the patient

"More than half the nearly 700,000 Americans who die of heart attacks every year never make it to a hospital," says Dr. John Chadbourn, assistant director of St. Vincent's mobile coronary-care unit. "So we developed a way to bring the hospital to them. The goal of the mobile unit is to reach heart attack victims well within the first hour after the onset of symptoms. If we can do that, their chances of staying alive increase dramatically."

Since its introduction in 1968, St. Vincent's mobile coronary unit (the only one in the country at that time) has responded to an average of 500 calls a year. Treatment given on 50 of these calls has been termed "unequivocally life-saving."

Supplying the need

Early last year, the emergency team began a search for a specially designed ambulance that would provide more effective medical tools by which the coronary team could better meet the needs of heart attack victims. Chadbourn explains: "We needed an ambulance with enough working area so that doctors could stand up inside and reach a patient from any angle. We needed heavier equipment fitted to the ambulance as a back-up for portable equipment because of its limited range. And we wanted the option of operating our electrical equipment off the vehicle's power supply.

"We contacted Grumman Allied first because of the company's reputation for building quality ambulances. And we stayed with them because of their understanding of what we wanted."

The final product

An Allied marketing representative, Ralph Swillinger, worked with St. Vincent's staff in the design of their kind of ambulance. An emergency medical technician himself, Swillinger has seen action as an Army medic and a volunteer ambulance corpsman. "Quite a bit of research went into designing that vehicle," Swillinger says. "In addition to specific features the hospital wanted, it has a special chassis for a smoother ride and a 'walk-through' capability from the cab to the rear of the vehicle. In case of an accident, or should the chassis wear out, the modular body can be lifted off and attached to another chassis.

"This ambulance has done such a good job at St. Vincent's during the past eleven months, it may become one of Allied's standard production models in 1977."

Why not? Any ambulance that's a success in New York City most likely can do the job anywhere. And territory covered by St. Vincent's mobile coronary unit is an especially rough testing ground for the medical team and equipment. On any given workday this 4-square-mile slice of New York—which includes Greenwich Village, the garment district, and parts of the Bowery, contains one half million residents and commuters.

Making it in the 'Big Apple'

When a call reaches the hospital for the mobile coronary unit, the team has four-and-one-half minutes to board the ambulance.

Seventy-five percent of the time, in spite of heavy traffic, potholes, and one-way-streets, the unit reaches its patients within 11 minutes after leaving the hospital. More important, it saves lives.

"The way this ambulance is proving itself in New York City," says Allied executive vice president Wells Darling, "should make it very attractive to cities and hospitals throughout the country. We're hopeful that it will become a life-saver in city streets and, in addition, a strong seller in the Grumman line."

The coronary care team from St. Vincent's Hospital responds to a call. It was a Grumman ambulance that got them there. (Photo by Bob Settles)

Grumman's Nutcracker

'Nutcracker' gets salute from Popular Science

Popular Science magazine's September cover story highlights the Grumman designed vertical-takeoff-and-landing plane called the Nutcracker.

The magazine, which reaches an audience of over 1.7 million, refers to the Nutcracker as "part of an exotic new family of fighter and transport aircraft" being considered by the United States Navy. And though the plane is specifically intended for use on smaller Navy vessels like frigates and destroyers, its design "might even lead to a new kind of airliner," Popular Science says.

The chief characteristic of the Nutcracker (conceived by Grumman Aerospace engineers Bob Kress and Jim Corbett and developed by a company team) is that the aircraft fuselage is hinged behind the cockpit allowing the plane to land with its tail straight down. *The cockpit remains level during landings.*

A plane hovering—sitting on its tail

Popular Science writer Ben Kocivar describes the craft in flight this way: "As it slows to less than 120 knots, the rear half of the fuselage, complete with two big turbofan engines and a twin-finned tail assembly, starts to pivot down. The forward fuselage section and wing remain level. The rear section keeps coming down until it is pointed straight at the ground. The plane is now hovering, sitting on its tail in the air, supported only by the powerful jet exhaust."

The Nutcracker's big advantage is its ability to land in confined spaces. "But a special bonus is that the cockpit stays horizontal for pilot visibility and orientation," Kocivar points out.

Wave of the future?

Although, as Popular Science stresses, "the Nutcracker concept is little more than a gleam in the eye at this point," the potential commercial uses for aircraft of this type are apparent. For instance they "promise new ability to supply men and equipment to big offshore oil rigs and other deep-ocean installations."

The magazine's conclusion: "It is likely that this new aircraft technology will show up in airliners of the future and in smaller aircraft you may one day fly."

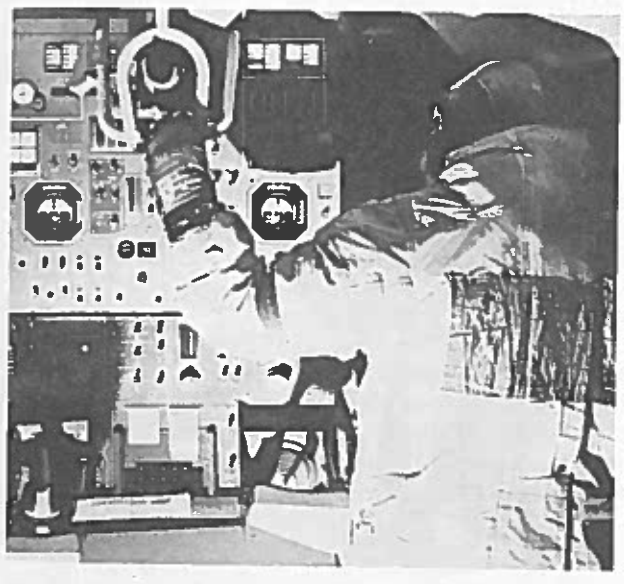
Getting on with the show

Long Island is the cradle of modern aviation. And so, busy Nassau County set time aside to harken back to those barnstorming days of the magnificent men in their flying machines. The occasion was the "Spirit of '76 Air Show" at the Nassau Coliseum.

Fittingly, the three-day hoopla took place within sight of old Mitchel Field where Charles Lindbergh took off on his epic flight.

Grumman was well represented at the opening ceremonies by Chairman Jack Bierwirth and Vice President Jack Rettaliata and with indoor and outdoor exhibits including the Molab and Lunar Module. (Photos by Fred Annette and Gerry Costello)

Aboard the Freedom Train



All aboard Long Island, here comes the Freedom Train. Grumman Corporation bought a ticket on this prestigious national exhibit on July 20, 1969, when man first landed on the moon.

In one of the train's exhibit and showcase cars, visitors can stand at the controls of the Grumman Lunar Module alongside a model of astronaut Alan Shepard. There they can view the lunarscape and hear the actual sounds of man's first moon walk.

These and other exhibits are included among a rare collection of documents, films and memorabilia contained in the rolling bicentennial museum which is rumbling through New York State. (Photos by Fred Annette)

Big Secret... continued

meet any emergency that occurs anywhere in the United States for one year.

A long range plan

Because Grumman's comprehensive health insurance program covers blood replacement costs the "blood credit" feature of the new drive could even result in insurance cost savings. Blood replacement costs won't be charged against the insurance program if the blood drive brings in enough contributions to offset normal blood replacement costs throughout the year, says Bob Bradshaw, Grumman Corporation secretary.

"Grumman's participation in the plan is the first step in a long range effort by health officials to provide free blood for all area residents," says Bradshaw. Efforts are underway to extend the program to Grumman locations across the country, he said.

Everyone at Grumman's Long Island facilities will shortly be getting cards so that they can sign up. Employees will be asked to contribute once a year. Blood donation sessions will then be scheduled monthly at convenient locations mostly at Grumman plants.

Howe Fire wins record contract

The City of St. Louis has awarded a $1.1 million contract for 22 custom pumpers to Howe Fire Apparatus Company, Inc., a subsidiary of Grumman Allied Industries, Inc.

Howe won the contract over nine other companies, the largest number of fire apparatus manufacturers ever to submit bid proposals in such a competition in the history of St. Louis.

Commenting on the award, Robert F. Loar, chairman and chief executive officer of Grumman Allied, said, "When Howe, one of the oldest and most versatile fire truck manufacturers, became a Grumman company in February 1976, we predicted great results from the combined engineering, production and marketing talents. The St. Louis pumper contract, the largest single municipal sale in Howe's 104-year history, certainly confirms that judgement."

The 22 custom pumpers, capable of delivering 1,250 gallons per minute, represent a replacement of 64% of St. Louis's first line fire defense. They will be manufactured at Howe's main plant in Anderson, Indiana. Howe, whose products include aerial ladders, high-pressure units, grass fire-fighting units, rescue units, foam trucks and other special types of equipment, as well as pumpers, also has plants in Vinton, Virginia and Martinez, California.

GRUMMAN Overview

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